

THE BUTTERFLY FAUNA OF CENTRAL ARIÈGE, PYRENEES, FRANCE IN THE 1920s AND 2002

DAVID CORKE

Tye Green House, Wimbish, Saffron Walden, GB-Essex, CB10 2XE.

E-mail: David@Corke.biz

Abstract

The butterfly fauna of two Ariège (French Pyrenees) communes was studied during 2002 and data compared with similar surveys carried out in the 1920s. With the exception of the genus *Pyrgus* (where identification problems are severe) 95 species were found in the 1920s. Recent surveys have refound all these, either in the two communes or close by, and added a further 12 species. *Carterocephalus palaemon*, *Heteropterus morpheus* and *Araschua levana* have colonised the area since the 1920s: an extension of range that appears to be due to an increase in open woodland habitats following partial abandonment of farming. *Pyrononia tithonus* has reached higher altitudes, presumably a consequence of climatic changes. Over recent decades, abandonment of some farmland, and continuation of traditional farming elsewhere (combined with more intensive searching for localised species), has resulted in a very diverse known butterfly fauna in Ariège. In the last few years, farming methods have started to intensify (despite the local economy being mainly reliant on green tourism). This diverse fauna is now in danger.

Introduction

The Pyrenees have a diverse butterfly fauna: in France, second only to the Alps in number of resident species. Rondou (1902) produced the first catalogue for the French half of the Pyrenees and at the time the department of Ariège was by far the least well recorded. Rondou could locate only a few casual records from studies centred in other departments.

By the late 1920s the species list for Ariège had grown substantially, due almost entirely to the studies of Fassnidge (1926) who spent the month of August 1925 collecting butterflies and moths in the commune of Auzat and Nabokoff [as Nabokov then spelt his name] (1931) who stayed in the commune of Saurat, (a few kilometres to the north of Auzat) from late April to late June 1929.

In the second edition of his catalogue (1932) Rondou included the results from Fassnidge and commented on how much they contributed to filling the “Ariège Gap”: “The explorations of Ph. Henriot in Ariège in 1919 ... and of Mr Fassnidge in 1925 ... have filled the gap that we deplored in the first edition” [my translation from Rondou’s preface written 15 February 1932]. Henriot seems never to have published his Ariège studies and I know of them only from the very limited amount of information given by Rondou. Although Nabokov’s work was published by the time Rondou was completing his second edition, he seems not to have been aware of the study: he includes no records from Nabokov even in the supplement to the catalogue published in 1935.

In 1990, Willien and Essayen, published 10-kilometre distribution maps for the whole of France for the Satyridae. These added a number of (mainly high altitude) species to the Ariège list, but Willien still commented that his study shows “once

again, the gap, already pointed out several times, in the central Pyrenees (principally Ariège) where one can be certain that the Pyrenean *Erebia exist*" [my translation]. In recent years Graham Hart and I have been studying the butterfly fauna of Ariège with a view to publishing an up to date fauna for the department. In this paper I am concerned solely with comparing the butterfly fauna of Auzat and Saurat in the 1920s with that of today. These are the only two regions where such a comparison is possible.

Since the 1920s studies were both published in English journals (one of them in this journal) and the Ariège is becoming an increasingly popular destination for visits by butterfly enthusiasts from the Rhopaloceran desert of Britain, it seems appropriate to publish in a British journal.

The Nabokov study

Vladimir Nabokov was a lepidopterist throughout his life. As a boy in a privileged family in Russia he collected butterflies in the St Petersburg area (Nabokov, 1951). After the 1918 revolution he became part of the Russian refugee community in Berlin making a precarious living as a writer and teacher. The sale of the German translation and serialisation rights of his second published novel [later published in English as *King, Queen, Knave*] produced enough to repay his debts and encourage him to quit his job to take a four-month collecting trip to the Pyrenees with his wife (Boyd, 1990). The first six weeks were spent in the Pyrenees Orientales where the cold spring winds eventually persuaded him to leave for Saurat in Ariège. His stay in Saurat began, on 24 April 1929 [the day after his 30th birthday] at a hotel that he found inadequate mainly because of its low-quality toilet arrangements. This was presumably the Hotel du Commerce which still stands in the main street, but it no longer functions as a hotel. The main part of his stay was in rented rooms above a shop. He was young and fit enough to spend most fine days exploring the valley on foot, collecting in the "luscious meadows near the village" as well as climbing to the Col du Port and Carlong. He spent evenings moth hunting and still found time to write most of a novel [later translated into English as *The Defense*] which is widely recognised today as his first literary masterpiece (Boyd, 1990).

Nabokov's only publication on his studies in Ariège was published in the *Entomologist*. Although his stay in Pyrenees Orientales features in his autobiography there is scarcely a mention of Ariège. The *Entomologist* paper lists the species found, in date order of first sightings, giving brief indications of locality or relative abundance in some cases. The paper contains no reference list, the only mention of a publication is Oberthür's description of *Melitaea vernetensis* (Oberthür, 1909) to which Nabokov did not have access and so had some difficulty with the certain identification of some specimens. He had only some "later – and very short – descriptions, with which my specimens seem to agree". These short descriptions may have been those in the then current French checklist (Lhomme, 1923) although the nomenclature Nabokov used in his paper does not agree consistently with that in Lhomme nor with that in any other standard text available at the time that I have found.

Nabokov returned to Berlin at the end of June 1929 with “a splendid collection of butterflies” (Boyd, 1990). These specimens he was able to compare with those in the entomological collections in the Entomological Institute, Dahlem and the Natural Science Museum, Berlin. His collection later travelled with him when he escaped Germany for Paris in 1938, but was lost during the upheavals of the Second World War (Nabokov, 1951).

The Fassnidge 1925 study

William Fassnidge was a francophile teacher of modern languages who spent many of his summer vacations in Europe studying Lepidoptera. He appears to have chosen Auzat deliberately as an unexplored region that might produce exciting finds “our high hopes were not fulfilled, yet we spent a very pleasant holiday among a kindly people” (Fassnidge, 1926). He had read Rondou’s first catalogue and knew of the gap in the Ariège records. He arrived, with his collecting companion Mr A. E. Burras, by electric tramway from Tarascon station. It is still possible to travel by train from England to Tarascon but the electric tramway to Auzat has long since disappeared. The two friends stayed mostly at the Hotel Denjean, expressing pleasant surprise at the up-to-date bathroom. This hotel is still the main Auzat hotel and restaurant, I have enjoyed meals there but have not put its bathrooms to the test. Fassnidge was 37 years old in 1925. During his stay in Auzat all his entomological work was done on foot: “only rough tracks lead further up the valleys and any long excursion is a toilsome business”. None the less, he reached a range of habitats including up to 5500ft [1650m] in altitude. It seems that he did not explore the very high altitude habitats at the limits of the commune, near its borders with Andorra and Spain.

Fassnidge’s paper is a model of what such a collecting report should be. The checklist is taxonomically arranged, using the nomenclature standardised to that in “the catalogue of Staudinger and Rebel, 1901, so that reference to Monsieur Rondou’s catalogue is facilitated”. The body of the paper gives some descriptions of the valley and its habitats, specifies the map used for place names, and includes information on the places where localised and interesting species were found. All this woven into an interesting holiday narrative.

Fassnidge’s collection (many moths as well as the butterflies) was taken back to London where H. J. Turner, A. F. Hemming and the entomological staff at the British Museum helped with identifications.

The Fassnidge collection

On his death, the Fassnidge collection of macrolepidoptera passed to the British Museum (Natural History). Most of his butterflies remain in the drawers to which they were transferred when bought by the museum from his widow. These I have examined (but not dissected to examine the genitalia of difficult species). All the lycacnids and maybe some other specimens have been incorporated in the main collection and I have yet to locate these.

The specimens I have seen agree with those reported in his paper. I was, however, surprised to discover that many specimens from Auzat were dated August 1927 and these included a fritillary labelled (on the pin) "*M. pseudathalia?* AFH" [i.e. *Melitaea athalia celadusa* – a determination that appears correct to me]. Fassnidge had originally reported some of his 1925 specimens as *M. athalia* and then corrected this in the light of examination of the specimens by Capt A.F. Hemming who assigned them to "*M. dictynna*, Esp., race *vernetensis*, Obthr., and to *M. deione*, Hb.". These specimens are in the collection and it is evident that Hemming made genitalia examinations although his preparations are not part of the extant collection. The collection also includes four *Boloria pales* from Auzat dated 4 August 1927. This is also a species not reported from his 1925 visit.

Thus it seems that Fassnidge made a second visit to Auzat two years after the 1925 study. I can find no trace of any publication resulting from this visit. His diaries/log books in the possession of the Natural History Museum (London) cover only his entomological work in England. "Left for France" and "Returned from France" mark the start and end of the long vacations in both 1925 and 1927. Such a methodical man would surely have kept special diaries during his work in France. There is a large collection of his papers at the museum which I have yet to examine. Meanwhile, from his specimens, it is clear that he spent the summer of 1926 in the high Pyrenees, well to the west of Ariège and in the area where Rondou lived. They probably met. Rondou certainly had a copy of the 1926 paper when he prepared his 1932 edition of the catalogue. But Rondou did not indicate that he knew of Fassnidge's second visit! Some detective work still remains to be done on the history of Fassnidge's work in the Pyrenees.

The present study

Since 1985 I have made frequent visits to Ariège and made butterfly surveys in most parts of the Department. These included several single-day visits to Saurat and Auzat in the 1990s. In addition, Graham Hart, now resident in Ariège, made several visits to these communes from the late 1990s onwards. During 2002, we focused our attention on these two communes, endeavouring to make visits to a wide range of habitats within each commune at the same seasons in which they were surveyed by Fassnidge and Nabokov. We visited all the habitats specifically mentioned in the Fassnidge and Nabokov studies plus a range of others which we believe they are likely to have visited. In the case of "Roc des Yregges" mentioned by Nabokov, we have been unable to locate the place name on either old or current maps but from Nabokov's description it is assumed to be the 908m high peak half a kilometre due north of Saurat village. The total number of man-days spent collecting in the two communes was much less than the time available to Fassnidge and Nabokov during their stays. We were also a little older than the 1920s collectors, but the availability of motor transport enabled us to visit a wide-range of habitats more quickly.

Our survey objective was to establish which species found in the 1920s could be confirmed as still present in the valleys. For this purpose, we included records made

at any season, not just during the months when the 1920s surveys were made. In addition we wished to establish which species could be added to the lists from the 1920s: for this purpose we included only species found during the same time of year as the 1920s surveys (very late July to end of August in Auzat, late April to late June in Saurat).

In the results table we have used the nomenclature given in the current standard French field-guide (Lafranchis, 2000). In general we did not collect voucher specimens (except for a few *Pyrgus* species: see below). We were satisfied that we can identify most other species alive when netted and examined closely (but see the comments on *Erebia* “*tyndarus*” group and *Leptidea* spp below). For *Hipparchia* and *Melitaea/Melicta* fritillaries genitalia examination of the males was used in the field (with live butterflies) by gentle pressure on the sides of the abdomen, which enables examination of the key features with a hand-lens.

Leptidia reali and *L. sinapis* (sensu stricto) are both now known to occur in Ariège (Mazel & Leestmans, 1996 & 1999): these can only be separated by examination of dead specimens and this was not done for this study. Only one *Leptidea* specimen from Auzat survives in the Fassnidge collection. The genitalia have yet to be examined. In the present paper, both the records from the early and recent studies are *Leptidea sinapis* (sensu lato).

The *Pyrgus* problem

The genus *Pyrgus* is the only taxon of Ariège butterflies where both I and my colleague Graham Hart frequently have great difficulty in arriving at an identification of which we are confident. This despite using the keys in Lafranchis, supplemented by the more detailed (genitalia-based) keys in Guillaumin (1964 & 1966). Also, many specimens have evaded the net or not been consigned to the killing bottle. Although both Fassnidge and Nabokov explained the difficulties they had identifying the *Melicta/Melitaea* fritillaries, they made no comment about doubts relating to the *Pyrgus* species they found. I find this surprising.

Nabokov reported *malvoides*, *armoricanus*, *serratulae* and *onopordi*. There are no extant specimens and the record of *onopordi* is the only one from Ariège (and there is, according to Lafranchis (2000), no confirmed recent record from anywhere in the Pyrenees). On the other hand, there are several records of *P. onopordi* in the Pyrenees early in the 20th century and few people have looked seriously for it since. Rondou (1932) records *onopordi* for Ariège on the authority of Fassnidge, but Fassnidge does not report the species in his paper and, as yet, I have found no specimen in his collection.

The Fassnidge paper reported *alveus*, *serratulae*, *cirsii* and *carthami*. His collection reveals that he had doubts and difficulties not expressed in his paper. There are two specimens labelled *foulquieri* (one 1925, one 1927), a species he did not include in his published list. Two other specimens carry a label reading: “? *Alveus* teste WF, *fritillum* teste WPL some *carlinae* characters. They are intermediates”. I know just how he felt!

Until such time as the ecology and taxonomy of the Pyrenean *Pyrgus* populations have had some study (and the Fassnidge specimens examined closely) it seems that the safest course is to exclude the genus *Pyrgus* from further discussion.

Survival of the 1920s' fauna to the present time

Almost all the species found in the 1920s have been confirmed as still existing in the habitats or valley regions where they were originally found (see Appendix). Of the species not refound in the present survey all are known to be present in nearby Ariège communes and are much more likely to be absent from the present survey list because of insufficient surveying than through real absence. The current situation for all species not confirmed as still present is discussed below. While it is reasonable to predict that all the species known to Fassnidge and Nabokov still inhabit the same communes, we have no way of knowing whether the species are as abundant now as was once the case. The general abundance of butterflies in the two valleys seems very high: not just compared to northern Europe but also compared with the northern part of (lowland) Ariège where farming is more intensive. On the other hand, older residents of the two valleys all state that butterflies are rarer now than in their youth (Graham Hart, pers. comm.). This may be evidence of a genuine reduction in abundance or of the selective memories of the best butterfly days of years gone by.

Surprising absences from the 1920s' records

Fassnidge and Nabokov each failed to report a species that it is almost impossible to believe would not have been seen commonly at the time of their studies. Fassnidge's list does not include *Pieris napi*: today a common butterfly everywhere in Ariège and one which all other reports from the 1920s suggest was common throughout the Pyrenees. That part of his collection so far examined contains a few *P. napi* but none from Auzat. Nabokov found *Vanessa atalanta* in the Pyrenees Orientales but does not mention it in his list of sightings in Ariège. Again this is today a very widespread species, easily found as adult or larva in any part of the Pyrenees below the tree line and all early reports suggest that this was also the case in the 1920s. The least improbable explanation is that these species were actually seen in the 1920s in both valleys and that the omissions from one list in each case were clerical errors.

Changes in the faunal lists due to taxonomic changes since the 1920s

The original names used by Nabokov and Fassnidge are given in the Appendix, together with the current nomenclature used for each species. The current names are those in Lafranchis (2000): the best present guide to the French butterfly fauna. The standard French checklist (Leraut, 1997) was used to relate the names used by Nabokov and Fassnidge to the current taxonomy. In the following cases, splitting of species since the 1920s has occurred and some interpretation of the old records is required:

Leptidea sinapis is now divided into *L. reali* Reissinger and *L. sinapis* (sensu stricto).

As explained above, all records in the Appendix are for *L. sinapis* sensu lato.

Colias hyale is now divided into *C. hyale* (sensu stricto) and *C. alfacariensis*. There are no known confirmed records of *C. hyale* (sensu stricto) from Ariège, so the old records have all been assigned to *C. alfacariensis*.

Erebia tyndarus This name is now reserved for brassy ringlets from the Alps. There are two Pyrenean species accepted today *E. cassiodes* and *E. hispania*. Rondou regarded these as subspecies or forms of *E. tyndarus* and Fassnidge did not state which forms he found. According to Willien (1990) only *E. cassiodes* is known from the relevant area of Ariège. The Fassnidge specimens from Auzat appear all to be *E. cassiodes*. This needs confirmation by someone with more experience of this group of *Erebia* species. The *Erebia tyndarus* group taxonomy has been complicated by Leraut (1997) who has designated the Pyrenean taxa as *E. arvernensis carmenta* and *E. rondoui* ssp *rondoui* & ssp *goya*. This is said to be “in accordance with the remarkable work of Lattes, Mensi, Cassulo & Balleto (1994)” although these authors use neither *arvernensis* nor *carmenta* as a name for any Pyrenean taxon.

Aricia argyronomon. In the 1920s this taxon included *A. idas* and *A. argyrognomon* (sensu stricto). There are no confirmed records for *A. argyrognomon* (sensu stricto) in the Pyrenees, so the 1920s records are assigned to *A. idas*.

Species now known in Saurat and/or Auzat, probably present but undetected in the 1920s

The following species were detected neither by Fassnidge nor Nabokov yet there seems no good reason to postulate that they have colonised the area since the 1920s. They were all found in one or both of the valleys during the current survey and at the time of year when one or both of the 1920s surveys were carried out. I consider that the following species were present but not detected in Ariège during the 1920s:

Pieris manni. Nabokov mentions finding this species in the Pyrenees Orientales but did not record it from Saurat. Today it is fairly widespread, flying with *P. napi*. Since this species is today mainly restricted to the warmer, eastern, half of Ariège it may have colonised the region from the Pyrenees Orientales since the 1920s but I consider it more likely that it was already present at that time.

Pieris ergane. This species was unknown from France at the time of the early surveys, not being discovered in the Pyrenees until the 1960s (Dufay & Mazel, 1981). The report in the present paper is the first publication of any record from Ariège although there are now unpublished records from several localities in the eastern half of the department (Hart, pers. comm.). The species is extremely local and was found in just one part of the Saurat valley: a hot, dry calcareous slope near Bedheillac in grid square UTM-WGS34 0343 4747. This is the base of Mount Calamès: Nabokov specifically mentioned exploring the scree slopes.

Satyrus acaciae. A fairly widespread species in dry habitats in the centre and eastern part of Ariège, although we have found no specific Ariège pre-1990 records but Rondou (1932) knew it from “Toute la chaîne”.

Polyommatus thersites. Nabokov specifically states that he looked for this species amongst the *P. icarus* but found none. The recent record is from the same hot, dry habitat where *P. ergane* was found. This is the same type of habitat that has *P. thersites* elsewhere in Ariège today.

Hipparchia fagi. This species was known from several parts of the Pyrenees by Rondou (1932) but was described as “fairly rare” or “rare”. We found it much rarer than *B. circe* and restricted to calcareous sites. Its peak flight-time in the recent Ariège surveys is July (i.e. between the Nabokov and Fassnidge visits). The records in the present study in Saurat and Auzat are from the very end of June and the first couple of days of August.

Argynnis niobe. All the *A. niobe* in the Pyrenees are form *eris* (Rondou, 1932), which resembles form *cleodoxa* of *A. adippe*. Fassnidge found *cleodoxa* as did I in the present survey. There were also a small number of *A. niobe eris* at fairly high altitude in Saurat, flying with *A. adippe* (both typical and *cleodoxa*). All the *cleodoxa* in the Fassnidge collection from Auzat are correctly identified.

Brenthis ino. Nabokov was too early in the year to find this species and Fassnidge may have been just too late or unlucky. It is a widespread species today as it was in Rondou's time.

Mellicta athalia. Both Nabokov and Fassnidge admitted difficulties in identifying some of the *Melitaea/Mellicta* fritillaries. Neither reported *M. athalia* although see above regarding specimens collected by Fassnidge (Auzat, August 1927). Based on the examination of male genitalia in the field Graham Hart and I are satisfied that *M. athalia celadusa* occurs in both valleys.

Erebia sthenno. This is a high altitude species, which was found around the Lac de Soulcem (a reservoir created since the 1920s) in an area which probably was not reached by Fassnidge. It is widespread at altitude in Ariège.

Evidence of colonisations since the 1920s

Pyronia tithonus. Rondou (1932) states “Very Common. The whole chain [of the Pyrenees]. Scarcely ever lives above 700m and it is only by chance that it can be found at a higher altitude.” [my translation]. Since the whole Auzat valley is above 750m, it is not surprising that it was absent during Fassnidge's survey. It would certainly have been present in Saurat but not flying by the end of June when Nabokov left. In 1985, when I acquired a house at 800m in the Rivèrenert Valley (western Ariège), this species never reached the environs of the house but was common at 700m and below. It is now common around the house and found up to 900m. In view of the above, the fact that *P. tithonus* was common at 800-1000m in Auzat (in habitats warmer than in the Rivèrenert valley) is easily explained as the result of a fairly recent expansion in altitudinal range. This could easily be related to environmental warming in the same way that the recent northwards extension of its range in Britain has been interpreted.

Carterocephalus palaemon. This species is now easy to find in Saurat and it is very unlikely that Nabokov could have missed it if it were established in the valley in 1929. It was known as a rarity in the more central/western regions of the Pyrenees (e.g. near Lourdes) by Rondou (1932). The first record for Ariège of which I am aware is a specimen collected in 1976 by J-P. Mary in the extreme west of the department. It has now been found in wooded valleys from west to extreme east. It has yet to be confirmed for the Pyrenees Orientales but this must happen soon since it occurs so close to the border in Ariège. Neither Fassnidge nor I surveyed Auzat at a season appropriate for this species. The evidence that the species has colonised and spread through the department in recent decades is convincing. The reason is less easy to deduce. A move into warmer, more Mediterranean climates is unlikely to be a direct result of global warming, but if associated changes in the quantity or seasonality of rainfall have occurred then this may be important. The evidence against this is that the species is now found in communes where the average annual precipitation is under 1000mm and others where it exceeds 1500mm per year. This variation from place to place greatly exceeds any possible change in rainfall levels over a few decades. A more probable explanation is the increase in shady, moist, wooded valleys at the right altitude associated with the decline in the human resident population and the abandonment of intensive cultivation on marginal lands (see discussion below).

Heteropterus morpheus. The situation for this species is almost identical with that for *C. palaemon*. The first records for Ariège are from the 1980s (R. Essayen, pers. comm.) and it is now widespread and easy to find in wooded valleys at low or medium altitudes. This species was unknown to Rondou (1932) anywhere in the Pyrenees. Whatever the explanation for its spread into the area, it is likely to be the same as that for *C. palaemon*.

Araschnia levana. This is yet a third species with a similar history and habitat requirements. It requires light shade, normally open woodland, habitats. The first record for Ariège is 1975 (R. Essayen, pers. comm.) and it is now widespread throughout the department at altitudes below 1000m. Its spread into the Department has happened as the species has also colonised Spain and spread further north at the northern edge of its range. As with the two hesperids, increases in suitable woodland habitats seems the most plausible explanation.

Species not refound in Saurat or Auzat – probably still present but undetected

Carcharodus lavatherae. This is the least common of the three Ariège *Carcharodus* species, but it is widespread at higher altitudes with scattered records from localities close to Saurat and Auzat.

Neozephyrus quercus. Its habit of staying mainly in the oak canopy is the main reason for limited numbers of records in Ariège. It is widespread at low to medium altitudes and certain to be present in both Saurat and Auzat.

Satyrium w-album. There is a recent record (Ted Benton, pers. comm.) from Ax-les-Thermes. Like *N. quercus*, its canopy-dwelling habits have probably led to serious under-recording.

Lycaena hippothoe. There are many records in recent years, including from Miglos, very close to Auzat.

Cupido osiris. Although not yet refound in Saurat itself, the species has been found in the south-east of the Saurat valley (Col de Marmar) in 2001.

Polyommatus dorylas. There are scattered records from the 1970s (Roland Essayen pers. comm.) and recently (G. Hart, pers. comm.), including one from Niaux, just a few kilometres from Auzat and Saurat.

Erebia euryale. This is a widespread species between 1000 and 2000m.

Hipparchia semele. There are only a few recent records: all from very dry, low altitude habitats, some not far from Auzat.

Eurodryas aurinia. This is a declining but still widespread species which can usually be found easily as adults or larvae. Suitable habitats were found in Saurat and Auzat but we were not able to check them at an appropriate time of year.

Habitats in the 1920s

It is clear, both from the comments in the Fassnidge and Nabokov papers and from the detailed statistics available from INSEE (web-site of the French government statistical service) that both Saurat and Auzat had large populations of peasant farmers who extracted a living from the valleys by mixed farming. This involved terracing to create fields on valley sides, transhumance of stock (and stockmen) to high summer pastures and fairly severe pressure on woodland habitats. The human population had declined from its peak in the late 19th century but was still well over double the resident population of today.

Habitat changes – present

The most noticeable change has been a considerable increase in high woodland, resulting from secondary regeneration on abandoned farmland and from re-growth of coppices previously cut on very short coppice cycles. The lowland farmland that has remained in use has tended to be farmed in traditional low/input low/output methods by an ageing and dwindling population of small farmers. Some farms have increased in size and are now farmed in more specialist ways concentrating on rearing beef cattle (and even an ostrich farm). Stock is still grazed at high altitude but without constant care by resident shepherds or herdsman. This has tended to increase grazing pressure on areas easily accessible by motor vehicles and lessen it in others.

One habitat change that is presumably related to the changing pattern of high altitude grazing is the loss of *Rhododendron* from Col du Port (Saurat). Nabokov specifically comments that *Erebia epiphron* was “very common among the rhododendrons” at 5000 feet of altitude. The butterfly is still common, but the rhododendrons have gone, replaced by bracken *Pteridium* and broom *Ulex*.

Possible future developments

An encouraging trend is the arrival of new small farmers, seeking to escape the rat-race by small scale, fairly traditional, farming. Some regard these “neo-ruraux” as undesirable marginal members of society but they may well increase the chances of the survival of small scale farming and the biodiversity that goes with it. Official support for farming still seems to favour the creation of larger units and increase in fertiliser inputs leading to low diversity pasture replacing the “luscious meadows near the village” of Nabokov’s time. A more enlightened approach, supporting traditional (organic) farming would produce products for which there is high demand in the local shops and food markets and maintain the countryside which is what the tourists (the mainstay of the economy) come to see. Wonderful opportunities exist to ensure the survival of one of the most diverse butterfly faunas of western Europe. But it is difficult to believe that the Common Agricultural Policy, combined with the attitudes of the local chamber of agriculture, will not ensure that Ariège soon has a countryside much like the rest of France. Just with more mountains.

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Dedication

This paper is dedicated to the memory of William Fassnidge (born 7 January 1888, died 19 April 1949) and Vladimir Nabokov (born 23 April 1899, died 2 July 1977). Their enthusiasm for Ariège and its butterflies, has made possible this comparison with the fauna of today.

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APPENDIX

This table lists all the butterflies, except those in the genus *Pyrgus*, found by Fassnidge (Auzat) and Nabokov (Saurat) plus those found in the present survey at the same localities at the same seasons as the 1920s survey. Species not refound in the present survey have the first column (page number) in *italics*. Those found in the present survey but not in the 1920s have the first column in **bold**.

Lafranchis page	Lafranchis (2000) name	Nabokoff (1931) name	Saurat 1920s	Saurat recent	Fassnidge (1926) name	Auzat 1920s	Auzat recent
96	<i>Erynnis tages</i> (Linné, 1758)	<i>Nisoniades tages</i>	28/04/29	24/04/2002			
99	<i>Carclarodus lavatherae</i> (Esper, 1783)				<i>Erynnis lavatherae</i>	Aug. 1925	
100	<i>Carclarodus alceae</i> (Esper, 1780)	<i>Carclarodus alceae</i>	28/04/29	24/04/2002	<i>Erynnis alceae</i>	Aug. 1925	02/08/2002
101	<i>Carclarodus floceiferus</i> (Zeller, 1847)	<i>Carclarodus altheae</i>	28/04/29	16/06/2002	<i>Erynnis altheae</i>	Aug. 1925	
102	<i>Spialia sertorius</i> (Hoffmensegg, 1804 [Lafranchis gives 1840 in error])						
120	<i>Carterocephalus palaentou</i> (Pallas, 1771)	<i>Hesperia sao</i>	28/04/29	12/06/2002	<i>Hesperia sao</i>	Aug. 1925	
121	<i>Heteropterus morpheus</i> (Pallas, 1771)			24/04/2002			
123	<i>Thymelicus acteon</i> (Rottemburg, 1775)			16/06/2002			
124	<i>Thymelicus sylvestris</i> (Poda, 1761)	<i>Thymelicus thaumas</i>		29/07/2002	<i>Thymelicus acteon</i>	Aug. 1925	
125	<i>Thymelicus lineolus</i> (Ochsenheimer, 1808)	<i>Thymelicus lineola</i>	06/06/29	19/06/2002	<i>Adopaea flava</i> (tilianus)	Aug. 1925	05/08/2002
126	<i>Hesperia comma</i>		06/06/29		<i>Adopaea lineola</i>	Aug. 1925	05/08/2002
127	<i>Ochlodes venustus</i> (Bremer & Grey, 1853)	<i>Augiades sylvanus</i>	14/06/29	19/06/2002	<i>Urbicola comma</i>	Aug. 1925	18/08/1991
132	<i>Parnassius apollo</i> (Linné, 1758)				<i>Augiades sylvanus</i>	Aug. 1925	02/08/2002
135	<i>Parnassius mnemosyne</i> (Linné, 1758)	<i>Parnassius mnemosyne</i>	16/06/29		<i>Parnassius apollo</i>	Aug. 1925	05/08/2002

Lafranchis page	Lafranchis (2000) name	Nabokoff (1931) name	Saurat 1920s	Saurat recent	Fassnidge (1926) name	Auzat 1920s	Auzat recent
138	<i>Iptilicoides podalirius</i> (Linné, 1758)	<i>Papilio podalirius</i>	28/04/29	24/04/2002	<i>Papilio podalirius</i>	Aug. 1925	02/08/2002
139	<i>Papilio machaon</i> Linné, 1758	<i>Papilio machaon</i>	28/04/29	24/04/2002	<i>Papilio machaon</i>	Aug. 1925	05/08/2002
144	<i>Leptidea sinapis</i> [s.l. - see text] (Linné, 1758)	<i>Leptidea sinapis</i>	28/04/29	24/04/2002	<i>Leptidea sinapis</i>	Aug. 1925	02/08/2002
146	<i>Aporia crataegi</i> (Linné, 1758)	<i>Aporia crataegi</i>	23/05/29	11/06/2002	<i>Aporia crataegi</i>	Aug. 1925	05/08/2002
148	<i>Pieris brassicae</i> (Linné, 1758)	<i>Pieris brassicae</i>	28/04/29	24/04/2002	<i>Pieris brassicae</i>	Aug. 1925	02/08/2002
149	<i>Pieris rapae</i> (Linné, 1758)	<i>Pieris rapae</i>	28/04/29	24/04/2002	<i>Pieris rapae</i>	Aug. 1925	02/08/2002
150	<i>Pieris nani</i> Mayer, 1851			19/06/2002			05/08/2002
151	<i>Pieris ergane</i> (Geyer, 1828)			19/06/2002			
152	<i>Pieris napi</i> (Linné, 1758)	<i>Pieris napi</i>	28/04/29	24/04/2002	see text		02/08/2002
154	<i>Pontia daphnice</i> (Linné, 1758)	<i>Pontia daphnice</i>	28/04/29		<i>Pontia daphnice</i>	Aug. 1925	02/08/2002
156	<i>Anthocharis cardamines</i> (Linné, 1758)	<i>Euchloë cardamines</i>	28/04/29	24/04/2002			
157	<i>Anthocharis euphenoides</i> Staudinger, 1869	<i>Euchloë euphenoides</i>	28/04/29	24/04/2002	<i>Euchloë euphenoides</i>	Aug. 1925	
167	<i>Colias alfacariensis</i> Ribbe, 1905	<i>Colias hyale</i>	28/04/29	24/04/2002	<i>Colias hyale</i>	Aug. 1925	02/08/2002
168	<i>Colias crocea</i> (Geoffroy, 1785)	<i>Colias edusa</i>	28/04/29	24/04/2002	<i>Colias crocea (edusa)</i>	Aug. 1925	02/08/2002
169	<i>Gonepteryx rhamni</i> (Linné, 1758)	<i>Gonepteryx rhamni</i>	28/04/29	24/04/2002	<i>Gonepteryx rhamni</i>	Aug. 1925	02/08/2002
170	<i>Gonepteryx cleopatra</i> (Linné, 1767)	<i>Gonepteryx cleopatra</i>	28/05/29	12/06/2002	<i>Gonepteryx cleopatra</i>	Aug. 1925	
174	<i>Hamearis lucina</i> (Linné, 1758)	<i>Nemiobius lucina</i>	06/05/29				
178	<i>Neozephyrus quercus</i> (Linné, 1758)				<i>Ruralis quercus</i>	Aug. 1925	

Lafranchis page	Lafranchis (2000) name	Nabokoff (1931) name	Saurat 1920s	Saurat recent	Fassmidge (1926) name	Auzat 1920s	Auzat recent
180	<i>Satyrium acaciae</i> (Fabricius, 1787)			29/06/2002			
182	<i>Satyrium ilicis</i> (Esper, 1779)	<i>Thecla ilicis</i>	24/06/29	19/06/2002	<i>Strymon ilicis</i>	Aug. 1925	
183	<i>Satyrium w-album</i> (Knoch, 1782)				<i>Strymon w-album</i>	Aug. 1925	
185	<i>Satyrium spini</i> (Dennis & Schiffermüller, 1775)	<i>Thecla spini</i>	24/06/29	19/06/2002	<i>Strymon (Thecla) spini</i>	Aug. 1925	27/07/2002
186	<i>Callophrys rubi</i> (Linné, 1758)	<i>Callophrys rubi</i>	28/04/29	24/04/2002			
189	<i>Lycæna phlaeas</i> (Linné, 1761)	<i>Chrysophanus phlaeas</i>	28/04/29	24/04/2002	<i>Heodes (Rumicia) phlaeas</i>	Aug. 1925	27/07/2002
191	<i>Lycæna virgaureae</i> (Linné, 1758)				<i>Heodes virgaureae</i>	Aug. 1925	14/08/89
192	<i>Lycæna tityrus</i> (Poda, 1761)	<i>Chrysophanus doritis</i>	28/04/29	24/04/2002	<i>Heodes doritis</i>	Aug. 1925	
193	<i>Lycæna alciphron</i> (Rottemburg, 1775)	<i>Chrysophanus gordius</i>	24/06/29	02/07/2002	<i>Heodes alciphron</i>	Aug. 1925	
196	<i>Lycæna hippothoe</i> (Linné, 1761)				<i>Heodes hippothoe</i>	Aug. 1925	
201	<i>Lampides boeticus</i> (Linné, 1767)	<i>Lampides boeticus</i>	14/06/29	27/2002/2002	<i>Lampides boeticus</i>	Aug. 1925	02/08/2002
203	<i>Celastrina argiolus</i> (Linné, 1758)		28/05/29	24/04/2002	<i>Lycænoopsis argiolus</i>	Aug. 1925	
204	<i>Everes alcetas</i> (Hoffmannsegg, 1804)	<i>Everes alcetas</i>	17/05/29	24/04/2002			02/08/2002
205	<i>Everes argiades</i> (Pallas, 1771)	<i>Everes argiades</i>	28/04/29	24/04/2002			27/07/2002
206	<i>Cupido osiris</i> (Meigen, 1829)	<i>Lysandra sebrus</i>	17/05/29				
207	<i>Cupido minimus</i> (Fuesslin, 1775)	<i>Cupido minimus</i>	05/05/29	24/04/2002			
208	<i>Glaucopsyche alexis</i> (Poda, 1761)	<i>Lysandra cyllarus</i>	28/04/29	24/04/2002			
214	<i>Maculinea arion</i> (Linné, 1758)	<i>Lysandra arion</i>	24/06/29	27/07/2002	<i>Lycæna arion</i>	Aug. 1925	02/08/2002
218	<i>Pseudophilotes baton</i> (Bergsträsser, 1779)	<i>Lysandra baton</i>	28/05/29	27/07/2002	<i>Scolitandies baton</i>	Aug. 1925	27/07/2002
220	<i>Cyaniris semiargus</i> (Rottemburg, 1775)	<i>Lysandra semiargus</i>	17/05/29	23/05/1991	<i>Polyommatus semiargus</i>	Aug. 1925	18/08/1991

Lafranchis page	Lafranchis (2000) name	Nabokoff (1931) name	Saurat 1920s	Saurat recent	Fassnidge (1926) name	Auzat 1920s	Auzat recent
227	<i>Polyommatus dorylas</i> (Dennis & Schiffermüller, 1775)	<i>Lysandra hylas</i>	24/06/29		<i>P. hylas</i>	Aug. 1925	
230	<i>Polyommatus escheri</i> (Hübner, 1823)				<i>Polyommatus escheri</i>	Aug. 1925	02/08/2002
231	<i>Polyommatus thersites</i> (Cantener, 1834)			16/06/2002			
232	<i>Polyommatus icarus</i> (Rottemburg, 1758)	<i>Lysandra icarus</i>	28/04/29	24/04/2002	<i>Polyommatus icarus</i>	Aug. 1925	02/08/2002
234	<i>Lysandra coridon</i> (Poda, 1761)				<i>Polyommatus coridon</i>	Aug. 1925	02/08/2002
236	<i>Lysandra bellargus</i> (Rottemburg, 1775)	<i>Lysandra bellargus</i>	28/04/29	24/04/2002	<i>Polyommatus bellargus</i>	Aug. 1925	02/08/2002
244	<i>Aricia agestis</i> (Dennis & Schiffermüller, 1775)	<i>Lysandra medon</i>	05/05/29	24/04/2002	<i>Plebeius medon (astiarche)</i>	Aug. 1925	08/08/1993
250	<i>Plebejus argus</i> (Linné, 1758)			19/06/2002	<i>Plebeius argus</i>	Aug. 1925	06/07/1997
252	<i>Plebejus idas</i> (Linné, 1761)	<i>Plebeius argus</i> (argyrognomon)	28/05/29	19/06/2002	<i>Plebeius argyrognomon</i>	Aug. 1925	08/08/1993
261	<i>Pararge aegeria</i> (Linné, 1758)	<i>Pararge aegeria</i>	28/04/29	24/04/2002	<i>Pararge aegeria</i>	Aug. 1925	02/08/2002
263	<i>Lastommata maera</i> (Linné, 1758)	<i>Pararge maera</i>	05/05/29	23/05/1991	<i>Pararge m.</i>	Aug. 1925	05/08/2002
264	<i>Lastommata megera</i> (Linné, 1767)	<i>Pararge megera</i>	28/04/29	24/04/2002	<i>Pararge m.</i>	Aug. 1925	02/08/2002
268	<i>Coenonympha arcania</i> (Linné, 1761)	<i>Coenonympha arcania</i>	06/06/29	19/06/2002	<i>Coenonympha arcania</i>	Aug. 1925	05/08/2002
275	<i>Coenonympha pamphilus</i> (Linné, 1758)	<i>Coenonympha pamphilus</i>	28/04/29	24/04/2002	<i>Coenonympha pamphilus</i>	Aug. 1925	02/08/2002
278	<i>Pyronia tithonus</i> (Linné, 1771)						02/08/2002
280	<i>Aphantopus hyperantus</i> (Linné, 1758)	<i>Aphantopus hyperantus</i>	24/06/29	19/06/2002	<i>Aphantopus hyperantus</i>	Aug. 1925	02/08/2002

Lafranchis page	Lafranchis (2000) name	Nabokoff (1931) name	Saurat 1920s	Saurat recent	Fassnidge (1926) name	Auzat 1920s	Auzat recent
281	<i>Maniola jurtina</i> (Linné, 1758)	<i>Epinephele jurtina</i>	28/05/29	19/06/2002	<i>Epinephele j</i>	Aug. 1925	02/08/2002
290	<i>Erebia euryale</i> (Esper, 1805)				<i>Erebia euryale</i>	Aug. 1925	
291	<i>Erebia manto</i> (Dennis & Schiffmüller, 1775)				<i>Erebia manto</i>	Aug. 1925	18/08/1991
292	<i>Erebia epipliron</i> (Knoch, 1783)	<i>Erebia epipliron</i>	17/06/29	11/06/2002	<i>Erebia epipliron</i>	Aug. 1925	29/07/1993
298	<i>Erebia triaria</i> (Prunner, 1798)	<i>Erebia evias</i>	22/05/29	24/04/2002			
307	<i>Erebia cassioides</i> (Reiner & Hohenwarth, 1793)				<i>E. ryndarus</i>	Aug. 1925	18/08/1991
318	<i>Erebia sthenyo</i> Graslén, 1850						
320	<i>Erebia meolans</i> (Prunner, 1798)	<i>Erebia stygne</i>	07/05/29	01/07/1972	<i>E. stygne</i>	Aug. 1925	18/08/1991
322	<i>Melanargia galathea</i> (Linné, 1758)	<i>Melanargia galathea</i>	06/06/29	19/06/2002	<i>Melanargia galathea</i>	Aug. 1925	02/08/2002
330	<i>Brintesia circe</i> (Fabricius, 1775)	<i>Satyrus circe</i>	24/06/29	19/2002/06			02/08/2002
339	<i>Hipparchia semele</i> (Linné, 1758)				<i>Satyrus s.</i>	Aug. 1925	
343	<i>Hipparchia fagi</i> (Scopoli, 1763)			29/06/2002			02/08/2002
346	<i>Apatura ilia</i> (Dennis & Schiffmüller, 1775)				<i>Apatura ilia</i>	Aug. 1925	20/07/2002
346	<i>Argynnis paphia</i> (Linné, 1758)				<i>Dryas paphia</i>	Aug. 1925	02/08/2002
351	<i>Argynnis aglaja</i> (Linné, 1758)				<i>Argynnis aglaja</i>	Aug. 1925	05/08/2002
352	<i>Argynnis adippe</i> (Dennis & Schiffmüller, 1775)	<i>Argynnis cydippe</i>	06/06/29	19/06/2002	<i>A. cydippe (adippe)</i>	Aug. 1925	02/08/2002
353	<i>Argynnis niobe</i> (Linné, 1758)			16/06/2002			
355	<i>Issoria lathonia</i> (Linné, 1758)	<i>Issoria lathonia</i>	28/04/29	24/2002/2002	<i>Issoria lathonia</i>	Aug. 1925	05/08/2002
358	<i>Brenthis ino</i> (Rottemburg, 1775)						08/08/1993
361	<i>Boloria pales</i> (Dennis & Schiffmüller, 1775)				see text	Aug. 1927	

Lafranchis page	Lafranchis (2000) name	Nabokoff (1931) name	Saurat 1920s	Saurat recent	Fassnidge (1926) name	Auzat 1920s	Auzat recent
367	<i>Clossiana euphrosyne</i> (Linné, 1758)	<i>Brenthia euphrosyne</i>	05/05/29	24/04/2002	<i>Brenthia euphrosyne</i>	Aug. 1925	06/07/1997
370	<i>Clossiana dia</i> (Linné, 1767)	<i>Brenthia dia</i>	28/04/29	24/04/2002	<i>Brenthia dia</i>	Aug. 1925	05/08/2002
374	<i>Linnetis reducta</i> (Staudinger, 1901)	<i>Linnetis rivularis</i>	17/05/29	19/06/2002	<i>L. rivularis</i> Scop. (<i>canilla</i> Schiff.)	Aug. 1925	
376	<i>Nymphalis antiopa</i> (Linné, 1758)	<i>Vanessa antiopa</i>	28/04/29	29/04/1991	<i>Eu Vanessa antiopa</i>	Aug. 1925	
377	<i>Nymphalis polychloros</i> (Linné, 1758)				<i>Eteonia polychloros</i>	Aug. 1925	
378	<i>Aglais urticae</i> (Linné, 1758)	<i>Vanessa urticae</i>	28/04/29	24/04/2002	<i>Vanessa urticae</i>	Aug. 1925	
379	<i>Inachis io</i> (Linné, 1758)	<i>Vanessa io</i>	28/04/29	24/04/2002	<i>Vanessa io</i>	Aug. 1925	27/07/2002
380	<i>Vanessa atalanta</i> (Linné, 1758)	see text			<i>Pyrameis atalanta</i>	Aug. 1925	02/08/2002
381	<i>Vanessa cardui</i> (Linné, 1758)	<i>P.[?Pyrameis] cardui</i>	06/06/29	11/06/2002	<i>Pyrameis cardui</i>	Aug. 1925	02/08/2002
384	<i>Polygonia c-album</i> (Linné, 1758)	<i>Polygonia c-album</i>	28/04/29	24/04/2002	<i>Polygonia c-album</i>	Aug. 1925	02/08/2002
385	<i>Araschnia levana</i> (Linné, 1758)						27/07/2002
389	<i>Melitaea cinxia</i> (Linné, 1758)	<i>Melitaea cinxia</i>	28/04/29	24/04/2002	<i>Melitaea cinxia</i>	Aug. 1925	
390	<i>Melitaea dianina</i> (Lang, 1789)	<i>Melitaea dictynna</i>	22/05/29	19/06/2002	<i>Melitaea dictynna</i>	Aug. 1925	10/07/1991
391	<i>Melitaea phoebe</i> (Dennis & Schiffmüller, 1775)	<i>Melitaea phoebe</i>	28/04/29	24/04/2002	<i>Melitaea phoebe</i>	Aug. 1925	
392	<i>Melitaea didyma</i> (Esper, 1779)				<i>Melitaea didyma</i>	Aug. 1925	02/08/2002
394	<i>Mellicta athalia</i> (Rottemburg, 1775)				see text	Aug. 1927	27/07/2002
395	<i>Mellicta dejone</i> (Geyer, 1832)	<i>Melitaea deione</i>	17/05/29	25/04/2002	<i>Melitaea deione</i>	Aug. 1925	02/08/2002
397	<i>Mellicta parthenoides</i> (Keferstein, 1851)	<i>Melitaea parthenoides</i>	05/05/29	19/06/2002	<i>Melitaea parthenie</i>	Aug. 1925	
402	<i>Eurodryas aurinia</i> (Rottemburg, 1775)	<i>Melitaea aurinia</i>	17/05/29			Aug. 1925	10/07/1991